North Dakota Health Sciences Education

Content Standards

Approved & Adopted – January 2018



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Adapted from:	Ada	pted	from:
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-The National Health Science Standards. National Consortium for Health Science Education. Updated May 2015.

This set of standards was approved and edited with the inclusion of all current Health Science teachers in the state over a period of three months, through a cooperative online process and with meetings during professional development.

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Career and Technical Education Standards Introduction

Mission

The mission of the State Board for Career and Technical Education (CTE) is to work with others to provide all North Dakota citizens with the technical skills, knowledge, and attitudes necessary for successful performance in a globally competitive workplace.

Vision

The State Board for Career and Technical Education (CTE) is committed to providing career awareness, work readiness skills, occupational preparation, and retraining of workers throughout the state. Career and technical education will span all educational levels, providing youth with exploration opportunities and the foundation skills needed to enter the world of work while providing adults with skills needed to enter, re-enter, or advance in the workforce.

Goal

North Dakota Career and Technical Education's goal is to create a competitive and knowledgeable work force. This is accomplished through a variety of educational program areas that are organized to prepare students for careers in their chosen fields, to take leadership roles, and balance their multiple roles in life. CTE programs prepare students with the knowledge and skills to make informed career choices, to integrate and apply academic concepts, to prepare for successful participation in a global society, and to engage in lifelong learning.

Standards Development Process

Standards development is a multi-phase process. Existing and/or industry standards are the basis for the North Dakota Program Standards. A team of expert secondary and postsecondary teachers, business and industry representatives, and the state program supervisor draft the standards document. Once the document is finalized, the State Board for Career and Technical Education approves and adopts the standards.

Course Frameworks are also developed by the writing team. A framework includes a brief overview of the course content, topical units of study, and identifies the standards recommended for inclusion within the course. The frameworks are tailored to prepare young people for the opportunities in North Dakota. School Districts will use the frameworks as a guide for developing curriculum that reflects local needs.

Key Principles of Career and Technical Education

We believe that Career Technical Education:

- 1. Draws its curricula, standards, and organizing principles from the workplace.
 - The workplace provides the context, objectives, and organizing constructs for instruction and assessment. The workplace also defines the standards of performance necessary, including those required for academic, technical, and employability skills.
- 2. Is a critical and integral component of the total educational system, offering career-oriented benefits for all students. CTE classes offer educational benefits to students pursuing careers requiring specific technical skills as well as providing a strong foundation for those pursuing a traditional four-year (or more) degree.
- 3. Is a critical and integral component of the workforce development system, providing the essential foundation for a thriving economy.
 - Preparation of a well-prepared, qualified workforce requires solid academics, good work ethics, and specific technical skills as well as the ability to communicate, work with others, solve problems, and use information. CTE contributes directly to this preparation by providing a curriculum tied to specific workplace requirements.
- 4. Maintains high levels of excellence supported through identification of academic and workplace standards, measurement of performance (accountability), and high expectations for participant success.
 - Career Technical Education is committed to continuous improvement, attention to industry certification, and the development of highly qualified teachers.
- 5. Is robust and flexible enough to respond to the needs of the multiple educational environments, customers, and levels of specialization.
 - CTE involves a large and complex delivery system that (1) integrates career exploration, (2) provides effective tools for organizing all curricula, (3) facilitates the teaching and use of technology, (4) is integrated into the total learning experience, (5) enhances the learning of academic subjects, (6) teaches broad occupational skills, (7) includes all aspects of the industry, (8) teaches how to balance family and work responsibilities, (9) provides job-specific training, (10) is offered at multiple levels of the educational continuum, and (11) is delivered through a variety of educational environments.

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Standard	нелі	TH SCIENCE ACADEMIC FOUNDATION
1		derstand human anatomy, physiology, common diseases and disorders, and medical math principles.
Topic 1.1	Human An	atomy and Physiology
		Student Competencies
		Identify basic levels of organization of the human body.
		a. Chemical
		b. Cellular
	1.1.1	c. Tissue
		d. Organs
		e. Systems
		f. Organism
		Identify body planes, directional terms, cavities, and quadrants.
		a. Body planes (sagittal, mid-sagittal, coronal/frontal, transverse/horizontal)
	1.1.2	b. Directional terms (superior, inferior, anterior/ventral, posterior/dorsal, medial, lateral, proximal, distal,
		superficial, and deep)
		c. Cavities (dorsal, cranial, spinal, thoracic, abdominal, and pelvic)
		d. Quadrants (upper right, lower right, upper left, and lower left) Analyze basic structures and functions of human body systems (skeletal, muscular, integumentary, cardiovascular,
		lymphatic, respiratory, nervous, special senses, endocrine, digestive, urinary, and reproductive).
		a. Skeletal (bone anatomy, axial and appendicular skeletal bones, functions of bones, ligaments, types of
		joints)
		b. Muscular (microscopic anatomy of muscle tissue, types of muscle, locations of skeletal muscles,
		functions of muscles, tendons, directional movements)
		c. Integumentary (layers, structures and functions of skin)
		d. Cardiovascular (components of blood, structures and functions of blood components, structures and
	112	functions of the cardiovascular system, conduction system of the heart, cardiac cycle)
	1.1.3	e. Lymphatic (structures and functions of lymphatic system, movement of lymph fluid)
		f. Respiratory (structures and functions of respiratory system, physiology of respiration)
		g. Nervous (structures and functions of nervous tissue and system, organization of nervous system)
		h. Special senses (structures and functions of eye, ear, nose and tongue; identify senses for sight, hearing,
		smell, taste, touch)
		i. Endocrine (endocrine versus exocrine, structures and functions of endocrine system, hormones,
		regulation of hormones)
		j. Digestive (structures and functions of gastrointestinal tract, chemical and mechanical digestion,
		structures and functions of accessory organs)

		k. Urinary (structures and functions of urinary system, gross and microscopic anatomy, process of urine
		formation, urine composition, homeostatic balance)
		1. Reproductive (structures and functions of male and female reproductive systems, formation of gametes,
		hormone production and effects, menstrual cycle, and conception)
Topic 1.2	Diseases ar	nd Disorders
		Student Competencies
		Describe common diseases and disorders of each body system (such as: cancer, diabetes, dementia, stroke, heart
		disease, tuberculosis, hepatitis, COPD, kidney disease, arthritis, ulcers).
		a. Etiology
	1.2.1	b. Pathology
		c. Diagnosis
		d. Treatment
		e. Prevention
	1.2.2	Discuss research related to emerging diseases and disorders (such as: autism, VRSA, PTSD, Listeria, seasonal flu).
		Describe biomedical therapies as they relate to the prevention, pathology, and treatment of disease.
		a. Gene testing
		b. Gene therapy
	1.2.3	c. Human proteomics
		d. Cloning
		e. Stem cell research
Topic 1 2	Medical M	
Topic 1.3	Medical M	
		Student Competencies
		Demonstrate competency in basic math skills and mathematical conversions as they relate to healthcare.
	1.3.1	a. Metric system (such as: centi, milli, kilo)
	1.5.1	b. Mathematical (average, ratios, fractions, percentages, addition, subtraction, multiplication, division)
		c. Conversions (height, weight/mass, length, volume, temperature, household measurements)
	1.3.2	Demonstrate the ability to analyze diagrams, charts, graphs, and tables to interpret healthcare results.
	1.3.3	Demonstrate use of the 24-hour clock/military time.

Standard	COM	MUNICATION	
2	-	Demonstrate methods of delivering and obtaining information, while communicating effectively.	
Topic 2.1	Concepts	of Effective Communication	
		Student Competencies	
	2.1.1	Model verbal and nonverbal communication.	
		Identify common barriers to communication.	
	2.1.2	a. Physical disabilities (aphasia, hearing loss, impaired vision)	
		b. Psychological barriers (attitudes, bias, prejudice, stereotyping)	
	2.1.3	Identify the differences between subjective and objective information.	
	2.1.4	Interpret elements of communication using basic sender-receiver-message-feedback model.	
	2.1.5	Practice speaking and active listening skills.	
	2.1.6	Modify communication to meet the needs of the patient/client and be appropriate to the situation.	
Topic 2.2	Medical Terminology		
		Student Competencies	
	2.2.1	Use common roots, prefixes, and suffixes to communicate information.	
		Interpret medical abbreviations to communicate information.	
	2.2.2	a. Common abbreviations	
		b. Joint Commission official "Do Not Use List"	
Topic 2.3	Written C	ommunication Skills	
		Student Competencies	
	2.3.1	Utilize proper elements of written and electronic communication (spelling, grammar, and formatting).	
	2.3.2	Prepare examples of technical, informative, and creative writing.	

Standard 3	SYST	EMS -Identify how key systems affect services performed and quality of care.	
Topic 3.1	Healthcare Delivery Systems		
	Student Competencies		
	3.1.1	Compare healthcare delivery systems. a. Non-profit and for profit (such as: hospitals, ambulatory facilities, long-term care facilities, home health, medical and dental offices, mental health services) b. Government (such as: CDC, FDA, WHO, OSHA, Public Health systems/Health Departments, Veteran's Administration) c. Non-profit (such as: March of Dimes, American Heart Association)	
	3.1.2	Describe the responsibilities of consumers within the healthcare system (such as: self-advocacy, patient compliance, provider and consumer obligations).	
	3.1.3	Assess the impact of emerging issues on healthcare delivery systems (such as: technology, epidemiology, bioethics, socioeconomics).	
	3.1.4	Discuss healthcare economics and common methods of payment for healthcare. a. Private health insurance (such as: Blue Cross, Affordable Care Act - ACA) b. Managed care (such as: HMOs, PPOs, medical home) c. Government programs (Medicare, Medicaid, Tricare, and Workers' Compensation)	

Standard 4	EMPI	LOYABILITY SKILLS -Utilize employability skills to enhance employment opportunities and job satisfaction.
Topic 4.1	Personal T	Traits of the Health Professional
	4.1.1	Student Competencies Identify personal traits and attitudes desirable in a member of the career ready healthcare team. a. Acceptance of criticism b. Competence c. Dependability d. Discretion e. Empathy f. Enthusiasm g. Honesty h. Initiative i. Patience j. Responsibility k. Self-motivation l. Tact
	4.1.2	m. Team player n. Willingness to learn Summarize professional standards as they apply to hygiene, dress, language, confidentiality and behavior.
Topic 4.2	Employabi	
10ptc 4.2	Employabl	Student Competencies
	4.2.1	Apply employability skills in healthcare. a. Chain of command b. Correct grammar c. Decision making d. Flexible e. Initiative f. Integrity g. Loyalty h. Positive attitude i. Professional characteristics j. Prompt and prepared k. Responsibility

		Scope of practice
		m. Teamwork
		n. Willing to learn
Torio 4.2	Canaan Da	
Topic 4.3	Career De	cision-making
		Student Competencies
	4.3.1	Research levels of education, credentialing requirements, and employment trends in health professions.
	4.3.2	Distinguish differences among careers within health science pathways (diagnostic services, therapeutic services,
	4.3.2	health informatics, support services, or biotechnology research and development).
Topic 4.4	Employabi	lity Preparation
_		Student Competencies
		Develop components of a personal portfolio.
		a. Letter of introduction
	4.4.1	b. Resume
		c. Sample Projects
		d. Writing Sample
		e. Work-based Learning Documentation
	7.7.1	f. Oral Report
		•
		g. Service Learning/Community Service
		h. Credentials
		i. Technology Skills
		j. Leadership Examples
	4.4.2	Identify strategies for pursuing employment (social media, personal networking, job sites, internships).

Standard 5	LEGA	L RESPONSIBILITIES -Describe legal responsibilities, limitations, and implications on healthcare worker actions.		
Topic 5.1	Legal Res	Legal Responsibilities and Implications		
		Student Competencies		
		Analyze legal responsibilities and implications of criminal and civil law.		
		a. Malpractice		
		b. Negligence		
		c. Assault		
	5.1.1	d. Battery		
		e. Invasion of privacy		
		f. Abuse		
		g. Libel		
		h. Slander		
Topic 5.2	Legal Prac	tices		
		Student Competencies		
	5.2.1	Apply standards for the safety, privacy and confidentiality of health information (HIPAA, privileged		
	3.2.1	communication).		
	5.2.2	Describe advance directives.		
	5.2.3	Summarize the essential characteristics of a patient's basic rights within a healthcare setting.		
	5.2.4	Define informed consent.		
	5.2.5	Explain laws governing harassment and scope of practice.		

Standard 6	ETHICS -Understand accepted ethical practices with respect to cultural, social, and ethnic differences within the healthcare environment.			
Topic 6.1	Ethical Pr	Ethical Practice		
		Student Competencies		
	6.1.1	Differentiate between ethical and legal issues impacting healthcare.		
	6.1.2	Identify ethical issues and their implications related to healthcare (such as: organ donation, <i>in vitro</i> fertilization, euthanasia, scope of practice, ethics committee).		
	6.1.3	Utilize procedures for reporting activities and behaviors that affect the health, safety, and welfare of others (such as: incident report).		
Topic 6.2	Cultural, S	Social, and Ethnic Diversity		
		Student Competencies		
	6.2.1	Discuss religious and cultural values as they impact healthcare (such as: ethnicity, race, religion, gender).		
	6.2.2	Demonstrate respectful and empathetic treatment of ALL patients/clients (such as: customer service, patient satisfaction, civility).		

~ ·	SAFE	TY PRACTICES
Standard		
7	-1aeniij	y existing and potential hazards to clients, co-workers, and self. Employ safe work practices and follow health and safety policies and procedures to prevent injury and illness.
Topic 7.1	Infection	
•		Student Competencies
	7.1.1	Explain principles of infection control. a. Chain of infection b. Mode of transmission (direct, indirect, vectors, common vehicle [air, food, water], healthcare-associated infections [nosocomial], opportunistic) c. Microorganisms (non-pathogenic, pathogenic, aerobic, anaerobic) d. Classifications (bacteria, protozoa, fungi, viruses, parasites)
	7.1.2	Differentiate methods of controlling the spread and growth of microorganisms. a. Aseptic control (antisepsis, disinfection, sterilization, sterile technique) b. Standard precautions c. Isolation precautions d. Blood borne pathogen precautions e. Vaccinations
Topic 7.2	Personal S	afety
P		Student Competencies
	7.2.1	Apply personal safety procedures based on Occupational Safety and Health Administration (OSHA) and Centers for Disease Control (CDC) regulations.
	7.2.2	Demonstrate principles of body mechanics.
Topic 7.3	Environme	v
		Student Competencies
	7.3.1	Apply safety techniques in the work environment. a. Ergonomics b. Safe operation of equipment c. Patient/client safety measures (check area for safety)
Topic 7.4	Common S	Safety Hazards
		Student Competencies
	7.4.1	Observe all safety standards related to the Occupational Exposure to Hazardous Chemicals Standard (Safety Data Sheets (SDSs)). (www.osha.gov)
	7.4.2	Comply with safety signs, symbols, and labels.

Topic 7.5	Emergency Procedures and Protocols	
		Student Competencies
	7.5.1	Practice fire safety in a healthcare setting.
	7.5.2	Apply principles of basic emergency response in natural disasters and other emergencies (safe location, contact emergency personnel, follow facility protocols).

Standard	TEAN	IWORK	
8	-Identify roles and responsibilities of individual members as part of the healthcare team.		
Topic 8.1	Healthcare Teams		
		Student Competencies	
		Evaluate roles and responsibilities of team members.	
	8.1.1	a. Examples of healthcare teams	
	8.1.1	b. Responsibilities of team members	
		c. Benefits of teamwork	
		Identify characteristics of effective teams.	
		a. Active participation	
		b. Commitment	
		c. Common goals	
		d. Cultural sensitivity	
	8.1.2	e. Flexibility	
		f. Open to feedback	
		g. Positive attitude	
		h. Reliability	
		i. Trust	
		j. Value individual contributions	
Topic 8.2	Team Men	nber Participation	
		Student Competencies	
	8.2.1	Recognize methods for building positive team relationships (such as: mentorships and teambuilding).	
	8.2.2	Analyze attributes and attitudes of an effective leader.	
		a. Characteristics (interpersonal skills, focused on results, positive)	
		b. Types (autocratic, democratic, laissez faire)	
		c. Roles (sets vision, leads change, manages accountability)	
	8.2.3	Apply effective techniques for managing team conflict (negotiation, assertive communication, gather the facts,	
		clear expectations, mediation).	

Standard 9	HEALTH MAINTENANCE PRACTICES -Differentiate between wellness and disease. Promote disease prevention and model healthy behaviors.		
Topic 9.1	Healthy Behaviors		
		Student Competencies	
	9.1.1	Promote behaviors of health and wellness (such as: nutrition, weight control, exercise, sleep habits).	
	9.1.2	Describe strategies for prevention of disease. a. Routine physical exams b. Medical, dental, and mental health screenings c. Community health education outreach programs d. Immunizations e. Stress management f. Avoid risky behaviors	
	9.1.3	Investigate complementary and alternative health practices as they relate to wellness and disease prevention (such as: Eastern medicine, holistic medicine, homeopathy, manipulative and natural therapies).	

Standard 10	TECHNICAL SKILLS -Apply technical skills required for all career specialties and demonstrate skills and knowledge as appropriate.			
Topic 10.1	Technical Skills			
Student Competencies				
	10.1.1	Apply procedures for measuring and recording vital signs including the normal ranges (temperature, pulse, respirations, blood pressure, pain).		
	10.1.2	Obtain training or certification in cardiopulmonary resuscitation (CPR), automated external defibrillator (AED), foreign body airway obstruction (FBAO) and first aid.		

Standard 11						
		Utilize and understand information technology applications common across health professions.				
Topic 11.1	Key Princ	Key Principles of Health Information Systems				
		Student Competencies				
	11.1.1	Identify types of data collected in Electronic Health Records/Electronic Medical Records (EHR or EMR) (such as: history and physical, medications, diagnostic tests, patient demographics).				
	11.1.2	Explore different types of health record data collection tools (such as: patient monitoring equipment, telemedicine, phone application, and medical wearable devices).				
	11.1.3	Identify the types and content of an EHR/EMR (such as: pharmacy, laboratory, radiology).				
	11.1.4	Create documentation in EHR/EMRs that reflect timeliness, completeness, and accuracy.				
	11.1.5	Adhere to information systems policies, procedures, and regulations as required by national, state, and local entities.				
Topic 11.2	Privacy an	d Confidentiality of Health Information				
		Student Competencies				
	11.2.1	Apply fundamentals of privacy and confidentiality policies and procedures (HIPAA).				
	11.2.2	Identify legal and regulatory requirements related to the use of personal health information (such as: Health Information Technology Act—HITECH Act, American Recovery and Reinvestment Act—ARRA).				
	11.2.3	Identify common policies and procedures for proper access, disclosure and protection of personal health information (such as: passwords, administrative safeguards, database security).				
	11.2.4	Describe consequences of inappropriate use of health data in terms of disciplinary action.				
	11.2.5	Understand the principle to correct inaccurate information/errors entered into an EHR/EMR (such as: adding, clarifying, and correcting information).				
Topic 11.3	Basic Com	puter Skills				
1		Student Competencies				
	11.3.1	Apply basic computer concepts and terminology necessary to use computers and other mobile devices.				
	11.3.2	Demonstrate basic computer troubleshooting procedures (such as: restart, check power supply, refresh browser, check settings).				
	11.3.3	Demonstrate use of file organization and information storage.				
	11.3.4	Identify uses of basic word processing, spreadsheet, and database applications.				
	11.3.5	Evaluate validity of web-based resources.				
	11.3.6	Demonstrate appropriate usage of email and social media in a work environment (such as: work-related communications, personal texting on own time, appropriate language and content, use full language sentences).				

Career Ready Practices

1. Act as a Responsible and Contributing Citizen and Employee

Career-ready individuals understand the obligations and responsibilities of being a member of a community and demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them, think about the near-term and long-term consequences of their actions, and seek to act in ways that contribute to the betterment of their teams, families, community, and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.

2. Apply Appropriate Academic and Technical Skills

Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications and make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.

3. Attend to Personal Health and Financial Well-Being

Career-ready individuals understand the relationship between personal health, workplace performance, and personal well-being; they act on that understanding to regularly practice health diet, exercise and mental health activities. Career-ready individuals also take regular action to contribute to their personal financial well-being, understanding that personal financial security provides the peace of mind required to contribute more fully to their own career success.

4. Communicate Clearly, Effectively, and with Reason

Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice and organization and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

5. Consider the environmental, social, and economic impacts of decisions

Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organizations and the environment. They are aware of and utilize new technologies, understandings, procedures, materials and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and profitability of the organization.

6. Demonstrate creativity and innovation

Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

7. Employ valid and reliable research strategies

Career-ready individuals are discerning in accepting and using new information to make decisions, change practices, or inform strategies. They use a reliable research process to search for new information and evaluate the validity of sources when considering the use and adoption of external information or practices. They use an informed process to test new ideas, information, and practices in their workplace situation.

8. Utilize critical thinking to make sense of problems and persevere in solving them

Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur, quickly take action to address the problem, thoughtfully investigate the root cause of the problem prior to introducing solutions, and carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

9. Model integrity, ethical leadership, and effective management

Career-ready individuals consistently act in ways that align to personal and community-held ideals and principles while employing strategies to positively influence others in the workplace. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the direction and actions of a team or organization, and they apply insights into human behavior to change others' actions, attitudes, and/or beliefs. They recognize the near-term and long-term effects that management's actions and attitudes can have on productivity, morale, and organizational culture.

10. Plan education and career path aligned to personal goals

Career-ready individuals take personal ownership of their own educational and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals, and requirements. They have perspective regarding the pathways available to them and the time, effort, experience, and other requirements to pursue each, including a path of entrepreneurship. They recognize the value of each step in the educational and experiential process, and they recognize that nearly all career paths require ongoing education and experience. They seek counselors, mentors, and other experts to assist in the planning and execution of career and personal goals.

11. Use technology to enhance productivity

Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring and using new technology, being proficient with ubiquitous technology applications. They understand the inherent risks, personal and organizational, of technology applications, and they take actions to prevent or mitigate these risks.

12. Work productively in teams while using cultural/global competence

Career-ready individuals positively contribute to every team whether formal or informal. They apply an awareness of cultural differences to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.